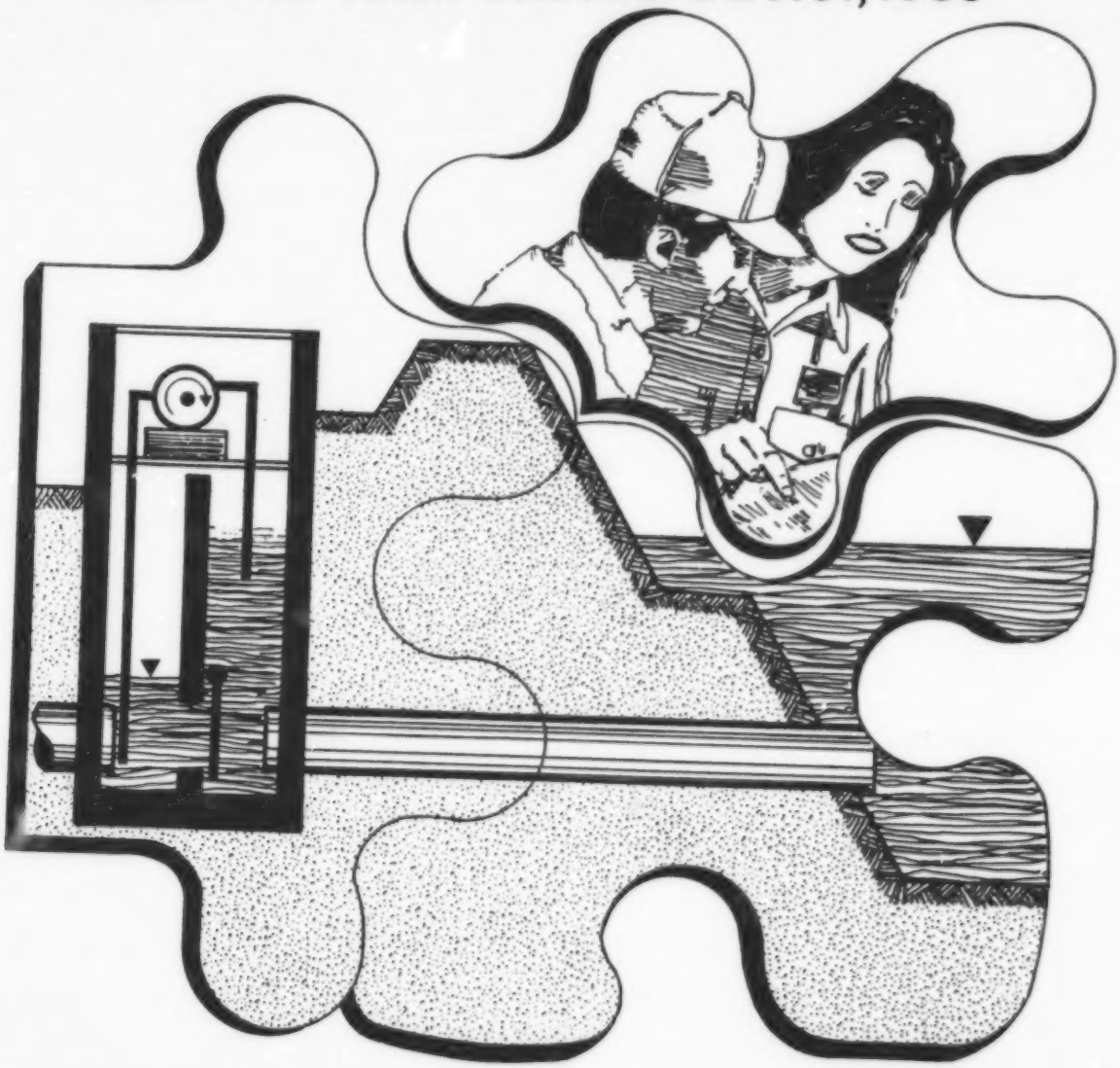
THE ANNUAL REPORT

OF THE

DYKING COMMISSIONER

•FOR THE YEAR ENDING DEC. 31, 1989



SUBMITTED TO:

The Hon. HARRY J. ENNS
Minister
Department of Natural Resources

SUBMITTED BY:

F. PENNER P. Eng.
Dyking Commissioner

90-06165/

Manitoba

Natural Resources

Water Resources Branch
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5
Tel: (204) 945-7404
Fax: (204) 945-7419

March 30, 1990

File: 11.1.5

The Honourable Harry J. Enns
Minister of Natural Resources
Department of Natural Resources
Room 314 Legislative Building
450 Broadway Avenue
WINNIPEG, Manitoba
R3C 0V8

Dear Sir:

I have the privilege to submit, herewith, the Annual Report of the Dyking Commissioner as required under Section 15 of The Dyking Authority Act.

This report covers the appraisal of the Greater Winnipeg Dyking System and ancillary Pumping Stations for the 1989 calendar year, to determine its adequacy to provide flood protection for the City of Winnipeg.

Please note that the Act does not require this report to be tabled in the Legislature.

Yours truly,

F. Penner, P. Eng.
Dyking Commissioner

Enclosure

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1 Acknowledgements

Evaluation of the adequacy of the dyking system is based mainly on reports provided by the staff of the City of Winnipeg and the University of Manitoba. Their cooperation in providing annual reports and technical advice is gratefully acknowledged.

In recognition of the crucial role people play in flood defence, the report cover was revised in 1989. To the dyke and pumping station appearing on earlier covers, a third element - people - was added.

2 The Dyking Authority Act of 1952

The Dyking Authority Act D110, passed in 1952, was intended to ensure that the dykes and pumping stations constructed subsequent to the 1950 flood were maintained in a state of readiness to combat future floods. In fact, the full title of the Act is *An Act to Provide for the Maintenance of Dykes and Pumping Stations in Greater Winnipeg*.

While authority and control over dykes and pumping stations was vested with the city or rural municipality in which they were situated, provision was made for the appointment of a Dyking Commissioner with powers to inspect dykes and pumping stations and to order work to be undertaken to maintain an integrated system of flood defence as well as to establish the location of the line of defence.

The Dyking Commissioner was required to "before the first day of April in each year, to make to the Minister a report on the administration and carrying out of the provisions of this Act during the year ending on the thirty-first day of December next preceding the making of the report, and on the condition of the dykes, pumping stations, and pumps, and their sufficiency for the purposes for which they were constructed or installed".

3 Changes Since 1952

Several major changes have taken place since the passing of the Act in 1952.

1. Major flood control projects affecting the City of Winnipeg namely the Red River Floodway, Portage Diversion and Shellmouth Dam projects have been completed.

2. Urban development has taken place beyond the lines of flood defence established earlier.

3. The five cities and two rural municipalities subject to the Act have been replaced by a single city.

4. The Canada-Manitoba Flood Damage Reduction Agreement has produced an Interim Flood Risk Map designating Flood Risk Areas and Floodways in the City of Winnipeg and has defined certain criteria for developments dictated by flood levels.

4 Current Issues

These changes and other considerations have given rise to the following issues:

1. The flood defence lines as currently established need revision to recognize the reality of the Floodway and recent urban development.

2. The Dyking Authority Act needs to be updated in two general areas:

   - Its area of jurisdiction needs to be clarified. Specific issues are its application in the "additional zone", to the University of Manitoba, to dykes forming part of the Floodway and to provincial highways which may form part of a line of defence.

   - The standards for primary dykes need to be specified preferably by regulation under the Act.

   The proposed amendment of the City of Winnipeg Act and the inclusion of the Dyking Authority Act in the City of Winnipeg Act could provide an opportunity to do this.

3. In his 1985 report the Dyking Commissioner noted the last major flood fighting operation in the City occurred in 1966 and recommended a one or two day "extreme flood workshop" for staff from the City and Provincial Government Departments to ensure an awareness of the probability and nature of an extreme flood. A workshop held in February 1989 was useful in identifying issues and problems. Further action to resolve these is required.

4. A key dyke closure in the case of an extreme flood is the dyke crossing PTH 75 at the Floodway Control Structure under the jurisdiction of the Department of Natural Resources. The Dyking Commissioner is of the opinion that the size of the temporary closure should be reduced by placing permanent fill adjacent to the closure section and that culverts through the closure section should be removed or fitted with proper gates.

5. While the Dyking Commissioner considers the above issues to be important and to require action, he does not consider them of greater importance that the ongoing routine maintenance of pumping stations and gate chambers.

5 Current Action on Issues

The current status of action to resolve these issues is as follows:

1. The City is reviewing the Primary Dyking System for redesignation and possible extensions. Surveys of several redesignation areas and possible extensions have been completed. Plans are being prepared and will be submitted to the Dyking Commissioner for approval. A number of preliminary proposals have been reviewed with the Commissioner as noted in the City of Winnipeg report in Appendix C. However the pace of this work needs to be increased.

   The City is working closely with the Forks Renewal Corporation to ensure that flood protection in the area is maintained and enhanced where possible.

   The City has initiated a project to prepared updated maps of the primary dykes.

2. The current review of the City of Winnipeg Act provides an opportunity to update the Dyking Authority Act. Discussions are underway between the DNR and Urban Affairs.

3. On February 23, 1989 an Extreme Flood Workshop was held with good attendance from City of Winnipeg Departments, from the Manitoba Department of Natural Resources and from the Emergency Measures Organization. This was a useful first step. What is needed now, in the opinion of the Dyking Commissioner, is a simulation exercise to fight an extreme flood in order to test the capability of the City to fight an extreme flood.

4. The Department of Natural Resources apparently has no current plans to reduce the size of the PTH 75 closure.

6 Inspection of Facilities

The City and the University have ongoing inspection and maintenance programs.

I have been impressed with the degree of care and the associated costs which the City applies to its flood protection facility.

7 Reports by the City of Winnipeg and the University of Manitoba

A questionnaire was sent to the City and to the University requesting information for the purpose of preparing this report. A copy of the request and questionnaire is included in Appendix B. The replies to the questionnaire, included in Appendix C, indicate that inspections were carried out, and that necessary maintenance work was carried out. All facilities appear to be in satisfactory condition.

8 Operation of Pumping Stations and Gates

During the 1989 spring flows, it was necessary to activate 14 permanent pumping stations. Details are included in the City report in Appendix C.

The City maintains and regularly updates a Flood Control Manual. Revisions were made in 1989. A major revision is planned for 1990. The University maintains a similar manual.

It is ironic that the design and operation of the flood control system has achieved such a level of excellence that the public is largely unaware and hence unappreciative of this activity.

9 Additional Works Constructed

Repairs and improvements were made to a number of waste water outfalls as noted in the City report in Appendix C.

10 Recommendations

It is recommended that:

1. City of Winnipeg complete its study of the revision and extension of the line of flood defence as soon as possible.

2. The Dyking Authority Act be revised as appropriate.

3. The City and the Provincial Department of Natural Resources continue their efforts to test their flood fighting plans.

4. The Department of Natural Resources consider improving the dyke closure section at PTH 75 and the Floodway Control Structure.

11 Appendix A

City of Winnipeg Map - Showing District Boundaries,
Flood Defence Lines and Pumping Station Locations.

NORTH KILDONAN

EAST KILDONAN

WEST KILDONAN

WINNIPEG

ST BONIFACE

ST VITAL

TUXEDO

FORT GARRY

JAMES

JAMES AVE PUMPING STATION

END OF FILE NO 10

START OF P/P NO 2 FILE NO 10-1-1029

END OF P/P NO 2 FILE NO 10-1-1029

START OF P/P NO 3 FILE NO 10-1-1029

END OF P/P NO 3 FILE NO 10-1-1029

START OF FILE NO 10

4

3

5

10

9

2

1

APPENDIX A

CITY OF WINNIPEG MAP SHOWING DISTRICT BOUNDARIES,
FLOOD DEFENCE LINES AND PUMPING STATION LOCATIONS.

FILE NO. 10-1-1039 C

12 Appendix B

Copy of Questionnaire Sent to:

The City of Winnipeg
and
The University of Manitoba

Water Resources Branch
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

Tel: (204) 945-7404
Fax: (204) 945-7419

February 21, 1990

File: 11.1.5

Director of Waterworks, Waste
and Disposal Department
1500 Plessis Road
Box 178 Transcona P.O.
Winnipeg, Manitoba
R3C 2Z9

Dear Sir:

DYKING COMMISSIONER'S 1989 ANNUAL REPORT

The Dyking Authority Act, Section 15, requires that:

"The commissioner shall, before the first day of April in each year, make to the minister a report on the administration and carrying out of the provisions of this Act during the year ending on the thirty-first day of December next preceding the making of the report, and on the condition of the dykes, pumping stations, and pumps, and their sufficiency for the purposes for which they were constructed or installed."

To assist me in making this report I request that you supply me with a report on the dyking and pumping stations under your jurisdiction by 1990 03 15. For convenience, I am including a standard questionnaire similar to that used in previous years.

Please report also on the progress made to revise the lines of flood defense as discussed during the Flood Workshops last winter.

Yours truly,

F. Penner, P. Eng.
Dyking Commissioner

FP:jph
Attachment

Water Resources Branch
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

Tel: (204) 945-7404
Fax: (204) 945-7419

February 21, 1990

File: 11.1.5

Mr. W.R. Wall
Associate Vice-President
University of Manitoba
Winnipeg, Manitoba
R3T 2N2

Dear Sir:

DYKING COMMISSIONER'S 1989 ANNUAL REPORT

The Dyking Authority Act, Section 15, requires that:

> "The commissioner shall, before the first day of April in each year, make to the minister a report on the administration and carrying out of the provisions of this Act during the year ending on the thirty-first day of December next preceding the making of the report, and on the condition of the dykes, pumping stations, and pumps, and their sufficiency for the purposes for which they were constructed or installed."

To assist me in making this report I request that you supply me with a report on the dyking system and pumping stations under your jurisdiction by 1990 03 15. For convenience, I am including a standard questionnaire similar to that used in previous years.

Yours truly,
ORIGINAL SIGNED BY

F. Penner, P. Eng.
Dyking Commissioner

FP:jph
Attachment

QUESTIONNAIRE FOR THE ANNUAL REPORT ON THE PRIMARY DYKING SYSTEM WITHIN THE CITY OF WINNIPEG

1. For the Reporting Year

Please provide information concerning:

a) Difficulties and problems encountered.

b) Maintenance and repairs carried out.

c) New Sewer Outfall Gate Structures constructed.

d) Improvements and modifications carried out.

2. Proposed Plans for Future

Please provide information concerning proposed new structures, modifications to existing structures, and proposed improvements or additions to the dyking system. Also note any evaluation studies completed or underway in connection with the "Primary Dyking System".

Further, in view of the apparent and river bank stability problems, please provide information in regard to:

a) Evaluation of river bank stability in critical areas.

b) Monitoring of erosion of river banks in critical areas.

c) Any remedial works undertaken or completed in the reporting year.

3. Availability and Location of Proposed Borrow Pits

Indicate changes if any in availability and location of proposed borrow pits in the reporting year.

13 Appendix C

Replies to the Questionnaire in Appendix B

from
The City of Winnipeg
and
The University of Manitoba

THE CITY OF WINNIPEG
WATERWORKS, WASTE, AND DISPOSAL DEPARTMENT
1500 PLESSIS ROAD • BOX 178 TRANSCONA P.O. WINNIPEG • MANITOBA • R2C 2Z9
FAX: (204) 224-0032

IN REPLY PLEASE REFER TO

1990 03 16

Manitoba Department of
Natural Resources
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

ATTENTION: MR. F. PENNER, P. ENG.
DYKING COMMISSIONER

Dear Sir:

RE: DYKING COMMISSIONER'S 1989 ANNUAL REPORT
Our File No. RF-1

In reply to your letter of February 21st, 1990, please find attached the 1989 Flood Control Reports of the Waterworks, Waste and Disposal Department, the Operations Department, and the Streets and Transportation Department, with regard to Flood Pumping Stations and the Dyking System within the City of Winnipeg.

Yours truly,

E.H. Klassen, P. Eng.
Acting Director

DDM:jb
Attachment

WINNIPEG
..where the New West begins.

THE CITY OF WINNIPEG

FLOOD CONTROL REPORT

1989

The City of Winnipeg, Waterworks, Waste and Disposal Department is responsible for the Primary Dyking System and the flood pumping stations within the City of Winnipeg. The following report summarizes the operations of these facilities for the 1989 calendar year.

Throughout the year, all flood pumping stations were inspected once per week by the Collection Systems crews of the Waterworks, Waste and Disposal Department. All stations were checked for temperature, basement flooding and vandalism. All problems were repaired as soon as possible.

Commencing in the month of March, all stations were given a complete maintenance check to ensure that these facilities were ready for operation when required. This annual servicing includes:

i) lubricating and operating all positive gates on sanitary, storm and combined sewers;

ii) inspection of all wet well floats;

iii) lubricating and operating of all pumps and equipment within the station;

iv) inspection of all electrical main boxes, starter boxes and motors;

v) inspection of all high voltage transformers and equipment;

vi) inspection of automated control system, where installed.

The Red River reached a peak of 16.5 feet above City datum at James Avenue on April 22nd, 1989. The river receded to below normal summer level by May 8th, 1989 and flood control operations were discontinued. Under these conditions it was necessary to activate 14 permanent flood pumping stations and to operate 19 positive gates (in addition to those associated with the permanent flood pumping stations) for the period April 12th to May 8th. During the period that the river was in the flood stage, staff from the Waterworks, Waste and Disposal Department were assigned to shifts providing 24 hour coverage for all collection system and flood control works. Attached to this report is the Annual Flood Activity Report for 1989.

During the months of October and November, all flood pumping stations were winterized in conjunction with the routine weekly checks. Six flood pumping stations were automated in 1989/1990 bringing the total number of automated stations to twenty-four (24). Note that the 1988 Annual Report incorrectly stated that there were only sixteen automated flood stations rather than an actual eighteen stations.

The Waterworks, Waste and Disposal Department, in conjunction with the six districts of the Operations Department, have continued in their efforts to upgrade the information provided in the Flood Control Manual. This information was assembled in an addendum form for use in 1989 and it is anticipated that the entire manual will be revised to reflect changes to the Flood Protection System completed in 1990.

Other 1989 issues pertinent to flood control include:

1.0 Extensions and Redesignations of the Primary Line of Flood Defence:

1.1 Investigations providing for extension of the Primary Line of Defence north of the Bergen Cut-off (in District #4) are in progress, in association with development applications on the Cut-off, and with the construction of the Kildonan Corridor Bridge embankment. A box culvert was constructed and accepted by the City at the McLeod Creek crossing, including a temporary flood pumping structure complete with flap/positive gates. The structure is designed for expansion of permanent pumping at such time as flows from a future underpass at Henderson Highway are accommodated.

1.2 The most recent extension of the primary dyke along the north limit of the Normand Park Development (in District #5) was completed in December, 1989. This Department will be proceeding with application for redesignation of the dyke once final acceptance is issued.

1.3 Extension of the primary dyke in the Riverpointe Development (in District #5) from the St. Amant Centre dyke to the Bishop Grandin bridge abutment is complete, except for some minor deficiencies. This Department will be proceeding with application for redesignation of the dyke once final acceptance is issued.

1.4 Land acquisition negotiations are on-going for private lands along the Seine River bank. Once secured, the lands will accommodate relocation of the Seine River at a bend and stabilization and reconstruction of Evans Street (in District #5) from Gareau Street

to Deniset Street for its proposed designation as a Primary Line of Defence. Some 200 dwellings and several sewer overflows will be added to the City's flood protection system through this initiative.

1.5 A dyke easement has been acquired through Lots 1 and 2, in part of RL 38, Parish of St. Vital, known as 180 Victoria Crescent (in District #5).

1.6 An easement agreement is pending finalization with the Catholic Parish of St. Norbert which will provide for the extension of the Primary Line of Defence (in District #6) south of the St. Norbert Cemetery between Rue St. Pierre and Seine River School Division property. This Department will be approaching the school division in 1990 to acquire an easement through their property. The St. Norbert Cooperative Chalet (Catholic Parish of St. Norbert) completed construction of the dyke between Avenue Du Couvent and Avenue Ste. Therese in 1989 to primary dyke standards.

1.7 Further to the Dyking Commissioner's February 21st, 1990 letter, the Department acknowledges that requests for formal redesignation are pending on several candidate primary dykes for which the Dyking Commissioner has provided his approval-in-principle. These are: St. Mary's Road; St. Anne's Road; Plaza Drive, and; River Grove Subdivision. The Department expects to make progress on these items in 1990.

2.0 Extreme Flood Workshop

On February 23rd, 1989, the Extreme Flood Workshop was held to test the City of Winnipeg Peacetime Emergency Plan in response to a simulated Red River flood. The simulated event included: Red River flood peaking at elevation 26 at James Avenue - City datum (753.57 geodetic); Red River level upstream of floodway at elevation 770.0; floodway water level at elevation 763.0 at Kildare storm sewer outlet, and; a dyke breach on Churchill Drive at Maplewood Avenue.

The exercise was organized by the Manitoba Emergency Measures Organization and the Manitoba Department of Natural Resources. The exercise was well attended by representatives from the City of Winnipeg (Waterworks, Waste and Disposal Department, Operations Department, Winnipeg Hydro, Fire Department, Police Department) and other utilities (Manitoba Hydro, Inter-City Gas Company, Manitoba Telephone System). The objectives of the exercise were to: develop solutions; identify problems but not to resolve them, and; identify cooperation required with others.

3.0 "The Forks Renewal Corporation" Development - Primary Line of Defence

A City approved land drainage outfall and flood pumping station was constructed. City approval was conditional on the formal re-designation of the Primary Line of Defence, including the submission of a plan identifying utilities, dyke grades, alignments, sections,

easements, suitable for submission to the Dyking Commissioner for his approval, and the execution of easement agreements. The Dyking Commissioner provided his advice to the City in this regard on September 9th, 1988, and again on August 28th, 1989 (for a revised alignment).

The Forks' Architect has revised the proposed dyke alignment twice during 1989 as a result of comments provided by this Department and the Dyking Commissioner. The second revised alignment (dated August 31st, 1989) was accepted however no further submissions (ie. plan(s) identifying utilities, dyke grades, sections, easements) from The Forks' Consultant have been made to the City to date.

4.0 Primary Line of Defence Mapping:

The Department is continuing a project initiated in 1986 to produce plan/profile maps of the City's 70 miles of primary dykes on aerial photo bases. Over 100 - "A1" drawings at 1:2000 scale will be produced. The drawings will update plans/profiles produced by the Provincial Water Control and Conservation Branch in 1967 in a modern, revisable format. The drawings will identify deficiencies in the dyking system and areas where the dyke must be realigned to keep pace with development. Preliminary engineering requirements, will be identified to address the deficiencies and capital works will be recommended to be funded from the Regional Flood Protection account.

5.0 The City of Winnipeg Development Agreement Parameters:

In order to reinforce and clarify the administration of developer responsibilities towards the flood protection of proposed developments, and to complement the appropriate sections of the City of Winnipeg Act and of Manitoba Regulation 9/85 in this respect, the City has included flood protection (by floodproofing or dyking) in it's Development Agreement Parameters. The Development Agreement Parameters were adopted by Council on June 21st, 1989.

6.0 Proposed Amendments to Flood Proofing Criteria:

The Manitoba Water Resources Branch provided the City with an opportunity to review and provide input to its proposed amendments to Manitoba Regulation 9/85, Flood Proofing Criteria. A series of meetings were held and input from various City Departments was compiled into a revised draft and returned to the Water Resources Branch.

7.0 Floodway Operations

One designate each from the City Waterworks, Waste and Disposal Department and the Provincial Water Resources Branch met on March 7th, 1989 to review the operational guidelines of the Winnipeg floodway. The City's objective is that the floodway operation should be modified to improve the level of protection in the City (ie. reduce the risk of basement flooding) by raising upstream water

levels above natural conditions for a range of more frequent flood events (2 year to 20 year return periods). The Province's objective is to attempt to accommodate the City while respecting upstream interests. It was concluded that to modify the present floodway operating procedure would require a detailed analysis of simulated flood events including operation of the Assiniboine River Diversion at Portage La Prairie and a cost-benefit analysis of the flood level scenarios. The Water Resources Branch is undertaking a two year project to map the flood prone areas of the Red River Valley and priority is to be given to the areas immediately upstream of the floodway.

Flood planning was immediately improved with the establishment of communication protocols. The City is to be made immediately aware of each stage or change during operation of the floodway and gates.

DDM:PEAL:jb

1990 03 16

THE CITY OF WINNIPEG
WATERWORKS WASTE & DISPOSAL DEPT.
ANNUAL FLOOD ACTIVITY REPORT
1989

FLOOD STATION	GATE CHAMBER	ACTIVATION/GATE CLOSED DATE	TIME	RIVER ELEV	DEACTIVATION/GATE OPENED DATE	TIME	RIVER ELEV
LaVerendrye		Apr 13	10:30	7.7	May 8	10:15	6.9
Despins		Apr 14	10:30	8.6	May 8	11:00	6.9
	St.-Mary's Rd.	Apr 12	10:30	7.2	(Flap Gate Checked)		
	Fort Rouge Park	Apr 14	9:30	8.6	May 8	11:45	6.9
	Maryland	Apr 14	8:30	8.6	(Flap Gate Checked)		
	Armstrong	Apr 14	9:30	8.6	(Flap Gate Checked)		
	St.-Norbert/X-Kalay	Apr 14	13:15	8.6	May 8	10:00	6.9
	Renfrew	Apr 14	10:30	8.6	May 8	14:00	6.9
Marion		Apr 15	11:00	9.5	May 8	15:00	6.9
	Ruby	Apr 16	14:45	11.8	May 4	16:30	12.4
	Aubrey Storm	Apr 16	14:00	11.8	May 4	15:45	12.4
Jefferson		Apr 17	13:00	12.5	May 4	9:00	12.4
	Litz Pl.	Apr 17	11:15	12.3	Apr 18	13:00	13.8
Metcalfe		Apr 17	13:50	12.5	May 4	10:00	12.4
Mager		Apr 17	14:30	12.5	May 4	10:45	12.4
	McDermot	Apr 18	9:45	13.8	May 3	11:00	13.6
	Lombard	Apr 18	10:15	13.8	May 3	11:30	13.6
Cockburn		Apr 14	10:30	8.6	May 14	10:30	8.6
Baltimore		Apr 18	9:15	13.8	May 3	13:30	13.6
	Eccles	Apr 18	8:45	13.8	May 3	13:00	13.6
Newton		Apr 18	10:30	13.8	May 3	9:45	13.6
	Burrows	Apr 18	9:00	13.8	May 3	10:00	13.6
Turnbull Dr.		Apr 18	11:00	13.8	May 3	15:00	13.6

THE CITY OF WINNIPEG
WATERWORKS WASTE & DISPOSAL DEPT.
ANNUAL FLOOD ACTIVITY REPORT
1989

FLOOD STATION	GATE CHAMBER	ACTIVATION/GATE CLOSED DATE	TIME	RIVER ELEV	DEACTIVATION/GATE OPENED DATE	TIME	RIVER ELEV
Bannatyne		Apr 20	21:00	14.9	May 1	9:45	14.6
	Spence	Apr 20	22:00	14.9	Apr 24	11:30	15.8
	Canora	Apr 20	21:30	14.9	Apr 24	12:30	15.8
Syndicate		Apr 20	21:45	14.9	May 1	11:30	14.6
Linden		Apr 20	22:30	15	May 1	13:30	14.6
	Bredin Dr.	Apr 21	11:15	15	May 1	10:30	14.6
	Archibald u/p	Apr 20	22:30	15	May 1	10:30	14.6
Galt		Apr 25	14:00	15.6	May 8	9:45	6.9
	Bredin Dr. (Set up pump)	Apr 21	11:15	15	May 1	11:00	14.6
	Chataway	Apr 25	10:30	15.5	May 8	13:00	6.9

90.03.05:peal

THE CITY OF WINNIPEG

Inter-office Memorandum

TO: Mr. D. McNeil, P.Eng.
Land Drainage & Flood
Protection Engineer
Waterworks, Waste & Disposal
1500 Plessis Road

FROM: J.B. Corkal, P.Eng.
District Engineer
Operations Department
District #1

RE: FL-01

DATE: 1990 03 13 FAX

RE: DYKING COMMISSIONER'S 1989 ANNUAL REPORT

In reply to your memo of January 26, 1990, the following is the District #1 reply to the Dyking Commissioner's questionnaire:

1. a) No difficulties were encountered in 1989;

   b) No major repairs took place in 1989;

   c) The gate structure for the new land drainage sewer to the Forks Development east of the CN Main Line was completed and tested;

   d) Parks Canada completed work on the Riverbank Park and walkway at the Forks site.

2. a) No new areas of riverbank instability were noted during the year;

   b) Monitoring of the bank of the Red River along Churchill Drive east of Hay Avenue continued throughout the year;

   c) No remedial works were undertaken or completed in the reporting year.

3. There are no locations within District #1 that could be used as a borrow pit.

J.B. Corkal, P.Eng.

GAP/rmk

FORM 5: 86 06

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

D.DM

ROUTE		
RECEIVED	ACTION	INFO
WDC		
EHK		
JB		
AHP		
SEM		
JMC		
FILE	RF-1	

To: D. McNeil, P. Eng.
Land Drainage & Flood Protection
Engineer

From: Steve Winch, C.E.T.
Technical Supervisor
District #2, Operations

Re: Dyking Commissioners
1989 Annual Report

Date: March 1, 1990

The following is in reply to your memo of February 26, 1990.

1. For 1989 Calendary Year

   a. There were no problems or difficulties encountered.

   b. Maintenance work was completed on the Raquette Street and St. Charles outfalls.

   c. No new outfalls were constructed.

   d. No improvements or modifications were made.

2. Proposed Plans for Future

   No new structures, modifications to existing structures, improvements or additions to the dyking system have been proposed for this year.

3. Availability and Location of Proposed Borrow Pits

   Borrow material is available from the District #2 Landfill Site and other City property and from projects (excess material from excavations).

for S. Winch, C.E.T.
Technical Supervisor
District #2, Operations

SW/ak

ROUTE		
	ACTION	INFO
WDC		
EHK		
DJR		
AHT		
SAK		
FILE		

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

TO: Mr. D. D. McNeil, P. Eng
Planning and Development
Branch

FROM: Mr. R. Amann, C.E.T.,
Technologist III
District #3,
Operations

RE:

DATE: March 12, 1990

RE: DYKING COMMISSIONER'S 1989 ANNUAL REPORT

Further to your memo dated February 26, 1990, we offer the following information:

1 (a) Difficulties and problems encountered
- nil

(b) Maintenance and repairs carried out
- no major repairs conducted
- normal maintenance works carried out.

(c) New sewer outfall gate structures constructed
- nil

(d) Improvement and modifications carried out
- Polson Avenue Outfall - renewed portion of outfall pipe and constructed new outfall structure (Note: Waterworks, Waste and Disposal Department revising location of flap gate)

- Armstrong Avenue Outfall - renewed outfall pipe and constructed new outfall structure

- John Black Avenue - constructed new LDS outfall

2 Proposed Plans for Future

General - No new structures are proposed or are modifications to existing structures scheduled for the near future. With respect to the dyking system, the District is presently developing a "Flood Control Manual" to evaluate the existing system.

.../2

Mr. D. D. McNeil, P. Eng.,
March 12, 1990

With respect to apparent erosion and riverbank stability problems:

(a) Evaluation of river bank stability in critical areas

- comment as per out report dated February 13, 1989 remain

(b) Monitoring of erosion of riverbanks in critical areas:

- riverbank erosion along St. John's Park and at the end of Burrows Avenue outfall continue to be of concern

(c) Any remedial works undertaken or completed

- see point 1(d) above

3 Availability and location of proposed borrow pits:

- the above is being reviewed as part of our "Flood Control Manual"

R. Amann, C.E.T.,
Technologist III

RA/kas

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

ROUTE	ACTION	INFO
FILE	RF-1	

TO: D. D. McNeil, P. Eng.
Planning & Development Branch
Waterworks, Waste & Disposal
Department

FROM: S. Dolhun, P. Eng.
District Engineer
District No. 4 Operations

RE: File No. S-40-10-02

DATE: 1990 03 02

RE: **PRIMARY DYKING SYSTEM - DISTRICT NO. 4**
1989 ANNUAL REPORT

1. For the Reporting Year

a) No difficulties or problems encountered.

b) Routine maintenance - no repairs required.

c) No new outfall gate structures constructed.

d) No improvements or modifications carried out in 1989.

2. Proposed Plans for Future

a) The District does not evaluate river bank stability. Any suspected problems are directed to the Streets and Transportation Department.

b) Monitoring of erosion by the District is done primarily at outfalls as part of normal sewer maintenance inspections.

c) No remedial works were undertaken in 1989.

3. Availability and Location of Proposed Borrow Pits

No changes.

S. Dolhun, P. Eng.

BT/sm

c.c. G. K. Stewart, P. Eng.

MAR 13 '90 15:45 CUM DISTRICT #2 204 2635

THE CITY OF WINNIPEG
VILLE DE WINNIPEG

OPERATIONS DEPARTMENT
VOIRIE, EAU ET EGOUTS

MAR 13 3 48 PM '90
604, CHEMIN ST. MARY'S ROAD • WINNIPEG • MANITOBA • R2M 3L5

IN REPLY PLEASE REFER TO
SE REFERER A

FAX: (204) 231-2635

ROUTE	ACTION	INFO
WDC		
EHK		
WJB		
AHP		
MC		
FILE		

TO: Waterworks, Waste & Disposal Dept.

ATTENTION: Doug McNeal

FROM: D Sears - Dist 5

DATE: 1990-03-13

NO. OF PAGES 2

NOTES:

1989 Primary Dyking System
Questionnaire

PRIMARY DYKING SYSTEM QUESTIONNAIRE
- DISTRICT #5 -

I. FOR THE 1989 CALENDAR YEAR:

Item (a): No difficulties or problems were encountered in 1989.

Item (b): (i) Repair to the Dumoulin Outfall were completed in 1989.

(ii) All culverts were inspected within the dyking system.

Item (c): (i) No new sewer outfall gate structures were constructed.

Item (d): (i) No improvements or modifications to the dyking system were carried out.

II. PROPOSED PLANS FOR FUTURE:

Item (a): Evaluation of Riverbank Stability in Critical Areas:

(i) Acquisition of Property on Evans Street at the Seine River (discussions continuing).

Item (b): A study was completed to monitor the bank stability and erosion problems associated with the Snow Dump at Lyndale Drive.

Item (c): Minor rip-rapping of the back toe at the Dumoulin Outfall was completed in 1989.

III. AVAILABILITY AND LOCATION OF PROPOSED BORROW PITS:

Proposed borrow pits are at the following locations:

. Whittier Park (area North of C.N.R. Highline)
. Provencher Boulevard East of Dawson Road (nominal)
. River Road opposite exist from St. Vital Park (nominal)
. St. Vital South Regional Park - East of Sandrington
. South End Sewage Treatment Plant

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

DDM
RECEIVED WATERWORKS
MAR 13 1 30 PM '90
FILE
JMC
SEM
AHP
WJB
EHK
WDC
ROUTE

To: Mr. D. D. McNeil, P. Eng.
Planning & Development Branch
Waterworks, Waste & Disposal Dept.
1500 Plessis Road

From: Dwight Gibson, P. Eng.
Assistant District Engineer
District 6, Operations

Date: 1990 03 12

Re: Primary Dyking System Within The City of Winnipeg -
Dyking Commissioner's 1989 Annual Report

As requested, we are submitting our annual report on the primary dyking system within District 6.

1. For the calendar year ending December 31, 1989:

   a) No problems or difficulties were encountered.

   b) Normal maintenance and repairs were carried out.

   c) No new sewer outfall gate structures were constructed.

   d) Major repair work has been completed on the Kilkenny Drive outfall, Dowker Avenue outfall, and Riverwood-Netley outfall.

2. Proposed Plans for the Future:

   a) Major repair work will be carried out on the Calrossie outfall. Work will be completed before the spring of 1990.

   b) An evaluation study in connection with the "Primary Dyking System", specifically the location of the primary dyke, is presently underway by this District.

   c) Evaluation of riverbank stability is planned for the area immediately around the Dowker Avenue outfall and Riverwood-Netley outfall.

   d) No remedial works on riverbanks were undertaken by the District in 1989. The District is not carrying out any program of monitoring erosion along the riverbank, but will advise the Waterworks, Waste and Disposal Department if an erosion problem is discovered.

continued on Page 2 . . .

3. Availability and Location of Proposed Borrow Pits:

Following is a list of borrow pit areas which, with the exception of the area described in a), lie inside the primary dyking system and should be accessible at river levels reached in 1950. Actual quantities of borrow pits are not known; however, sites are sufficiently large that adequate material should be available:

a) Northeast corner of Oakenwald Avenue and North Drive

b) Park area adjacent to South Drive between Kebir Place

c) Oakenwald School Grounds - westerly extremity of Manchester Boulevard North and South

d) River Lots 17 and 18 east of Waverley Street and north of Lot 16 Drain

e) Waverley Street from De Vos Road to Bison Drive - large open tracts of land on either side of Waverley Street.

Dwight Gibson, P. Eng.

HH/ah

cc: Harrie Hoitink

FORM E: 88 06

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

To:	Mr. D.D. McNeil, P. Eng. Waterworks, Waste & Disposal	From:	Mr. G.A. Knoll, P. Eng. Streets & Transportation
Re:	(D8) A:GAK-275.WP	Date:	1990 03 14

RE: DYKING COMMISSIONER'S 1989 ANNUAL REPORT

The Streets and Transportation Department undertook the following riverbank works in 1989:

Provencher Boulevard Culvert at the Seine River	Rip rap erosion protection placed at SE corner of structure.
Tremblay Street Bridge at at the Seine River	Rip rap erosion protection placed in river channel and slope paving placed on river banks.
Archibald Underpass Pump station outfall to Red River	Complete reconstruction of outfall, including rip rap protection.
Kildonan Bridge Project	Installation of rip rap erosion protection on river banks.
	Installation of slope indicators and piezometers to monitor bank stability on river banks.
	Construction of rock caissons and rock socketed concrete caissons to stabilize west river bank.
	Construction of concrete box culvert c/w flood control structure at McLeod's Creek.
Main/Norwood Bridge Project	Installation of slope indicators to monitor slope stability on the river banks at the Main Street and Norwood Bridges.
Charleswood Bridge	Installation of slope indicators to monitor slope stability on the river banks at the proposed site of the Charleswood Bridges.
Provencher Bridge	Installation of slope indicators to monitor slope stability on the river banks.

GAK/ddg

THE UNIVERSITY OF MANITOBA

OFFICE OF THE PRESIDENT

Winnipeg, Manitoba
Canada R3T 2N2

March 2, 1990

\File: 11.1.5

Mr. F. Penner, P.Eng.
Dyking Commissioner
Water Resources Branch
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

Dear Mr. Penner:

Subject: Dyking Commissioner's 1989 Annual Report

The following is in response to the Questionnaire for the Annual Report on the Primary Dyking Systems Within the City of Winnipeg:

1. 1989 Calendar Year

a) Difficulties and problems encountered: None.

b) Maintenance and repairs carried out: Routine only, valve, bearings and all electric motors were checked at our storm sewer pumping station for satisfactory operation.

c) New Sewer Outfall Gate Structures constructed: None.

d) Improvements and modifications carried out: Major storm sewer work was carried out during the summer of 1989 (sanitary to storm sewer cross connections were eliminated).

2. Proposed Plans for the Future: None.

Bank Stability:

At present, no evaluation studies are underway in connection with the "Primary Dyking" system.

Bank slippage in the southerly area had been reviewed at several intervals throughout 1989 and normal lateral movement of less than 5 centimetres was observed.

Fifteen river bank location check points had been established, which have been monitored by University of Manitoba Physical Plant staff during 1989. No unusual bank slippage beyond 3 cm was detected.

The bank adjacent to the Wallace Building (Geological Sciences) site was monitored throughout 1989, by University of Manitoba Physical Plant staff, which will be continued on a regular basis. Bank slippage of less than 3 cm was detected.

3) Availability and Location of Proposed Borrow Pits:

No changes are suggested in the availability or location of proposed borrow pit for 1990.

Yours sincerely,

W. R. Wall
Associate Vice President
(Administration)

wrw/nl

cc: Mr. T. G. Falconer, Vice President (Administration)
Mr. H. Frank, Director of Physical Plant